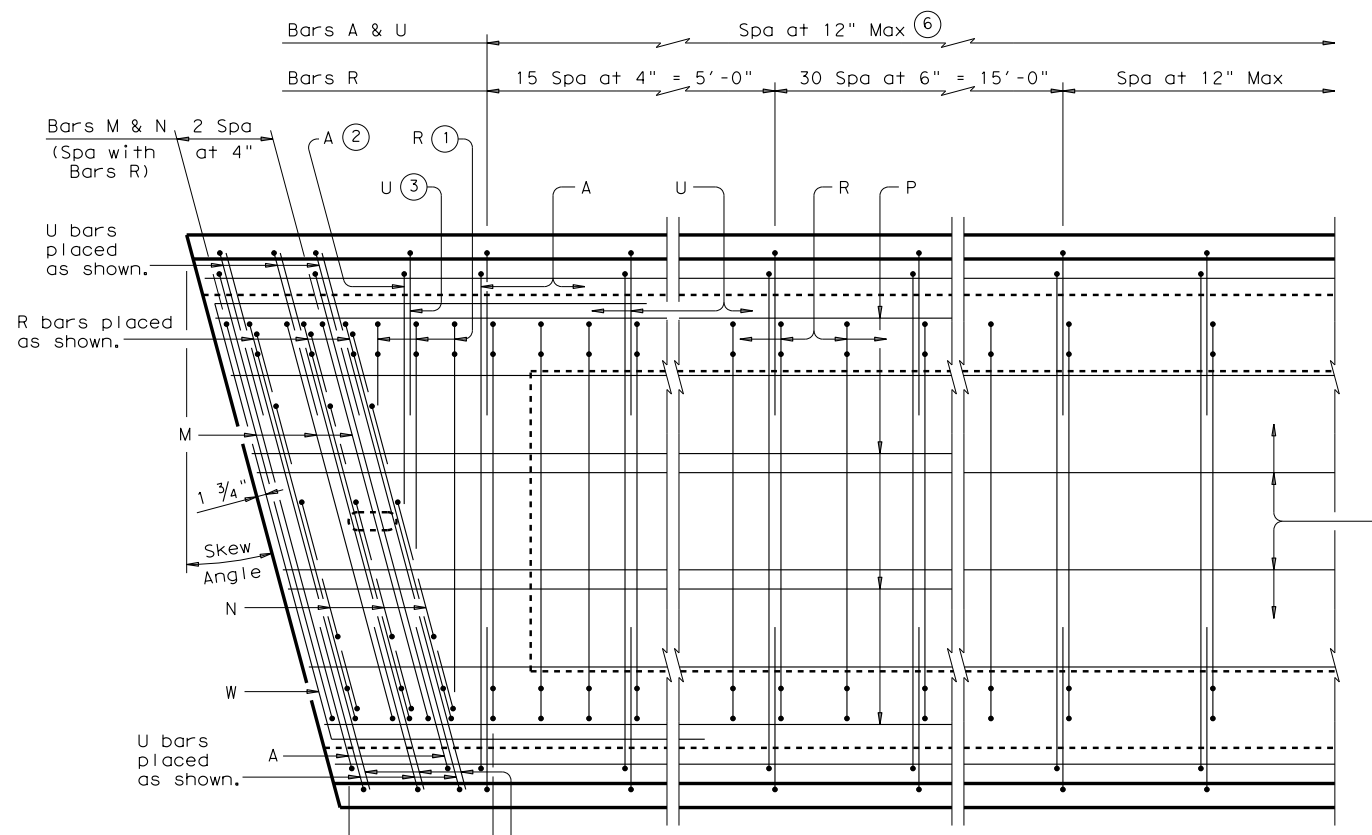
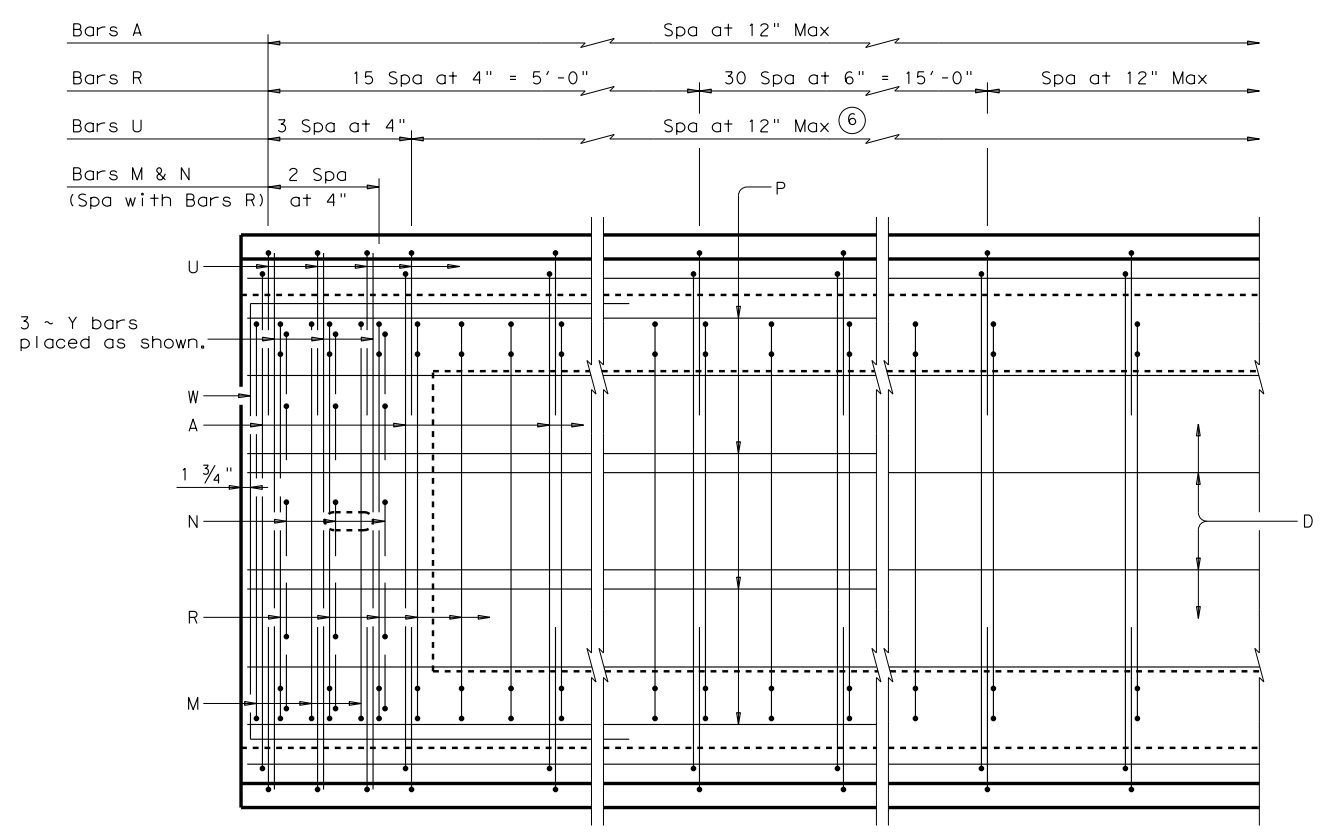


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**PART PLAN ~ 15° SKEW**

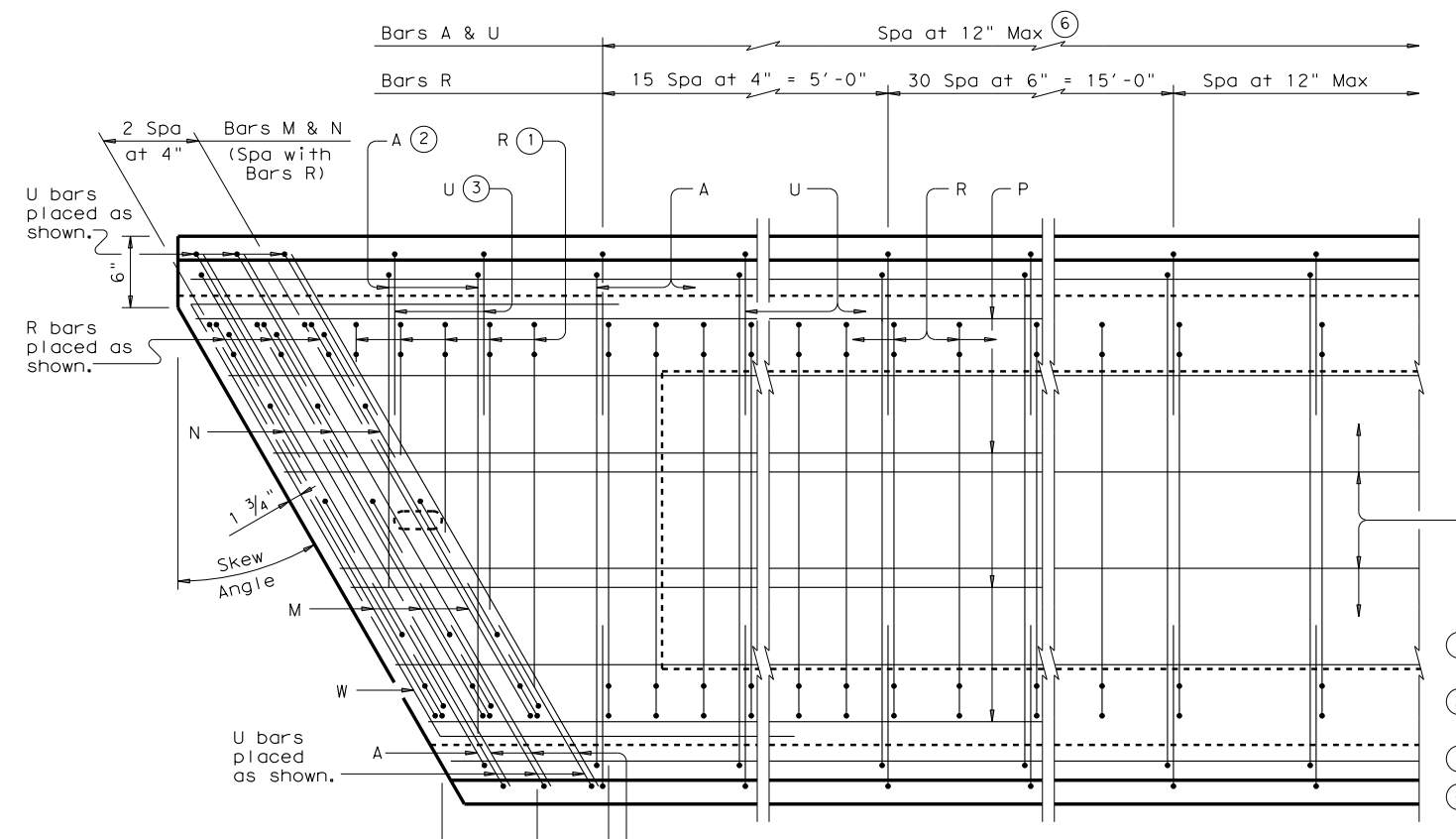
(Showing Type 4XB34 with skew angles over 0° to 15°)



**PART PLAN**

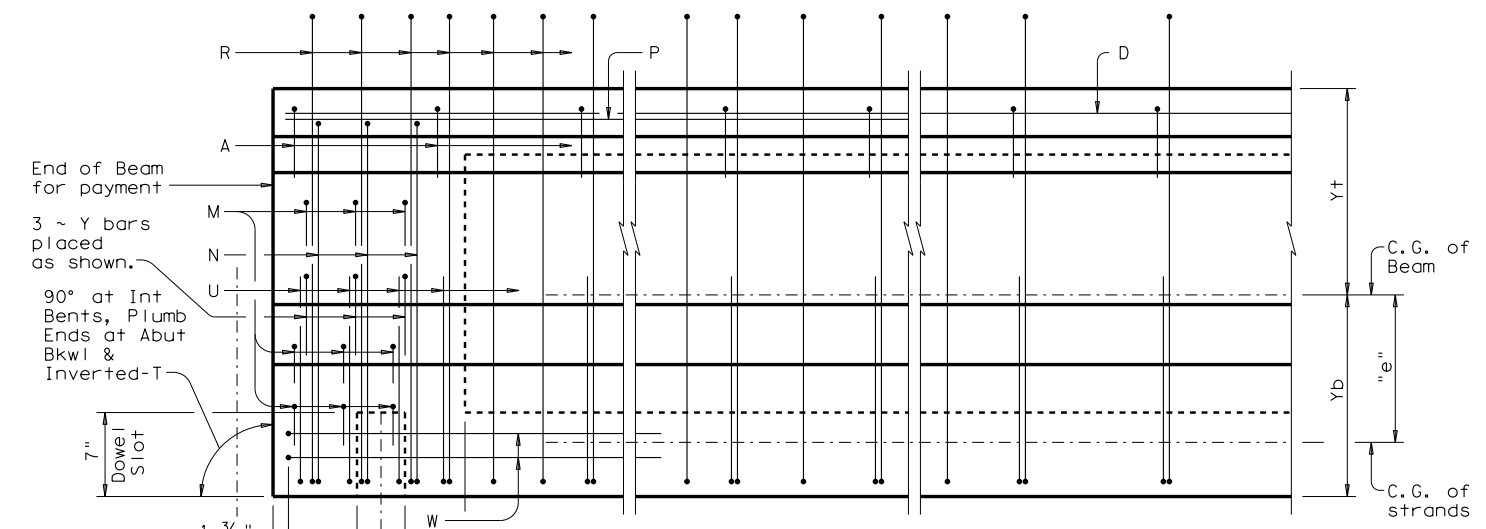
(Showing Type 4XB34)

⑥ End Bars U the greater of 5' from beam ends or 3' beyond the last debonded strands.



**PART PLAN ~ 30° SKEW**

(Showing Type 4XB34 with skew angles over 15° to 30°)



**ELEVATION**

- ① Bars R spaced at 4" Max. Cut Bars R as necessary to provide 2" clear between adjacent bars as shown.
- ② Bars A spaced with Bars U. Cut Bars A as necessary to provide 2" clear between adjacent bars as shown.
- ③ Bars U spaced at 8" Max as shown.
- ④ Measured perpendicular to  $\phi$  Interior Bents, Abutment Bkwl or Inverted-T Stem.
- ⑤  $\phi$  4" x 1 1/2" Vertical Slotted Hole at doweled beam end [labeled (D) on Bridge Layout]. Required for outside beam only or as shown on substructure details. Anchorage holes may be tapered (4 3/4" x 1 5/8") at base. If holes are formed with sheet metal, forms may be left in place.

HL93 LOADING SHEET 1 OF 3



**PRESTRESSED CONCRETE X-BEAM DETAILS (TYPE XB34)**

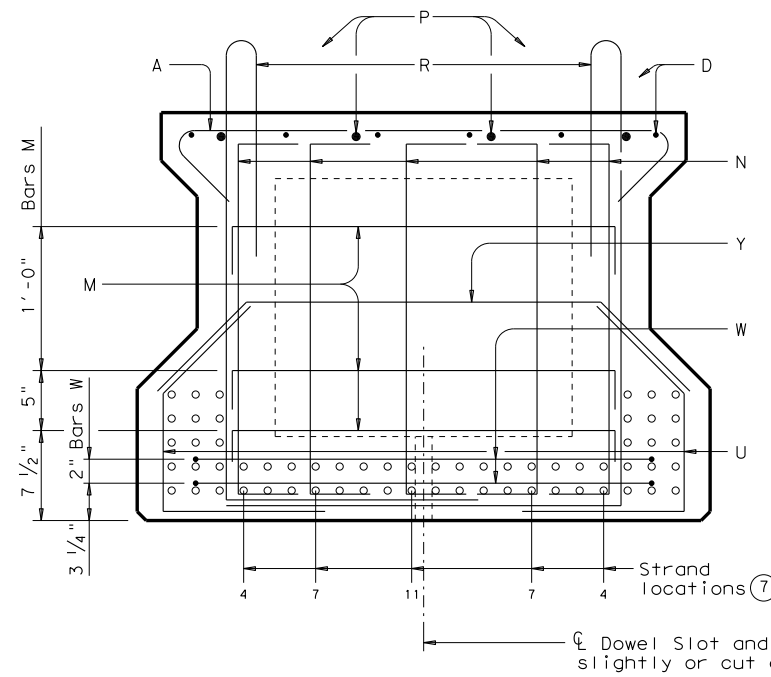
**XB34**

FILE: xbsts03.dgn	DN: JMH	CK: AM	DW: JTR	CK: JMH
©TxDOT June 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY	SHEET NO.	

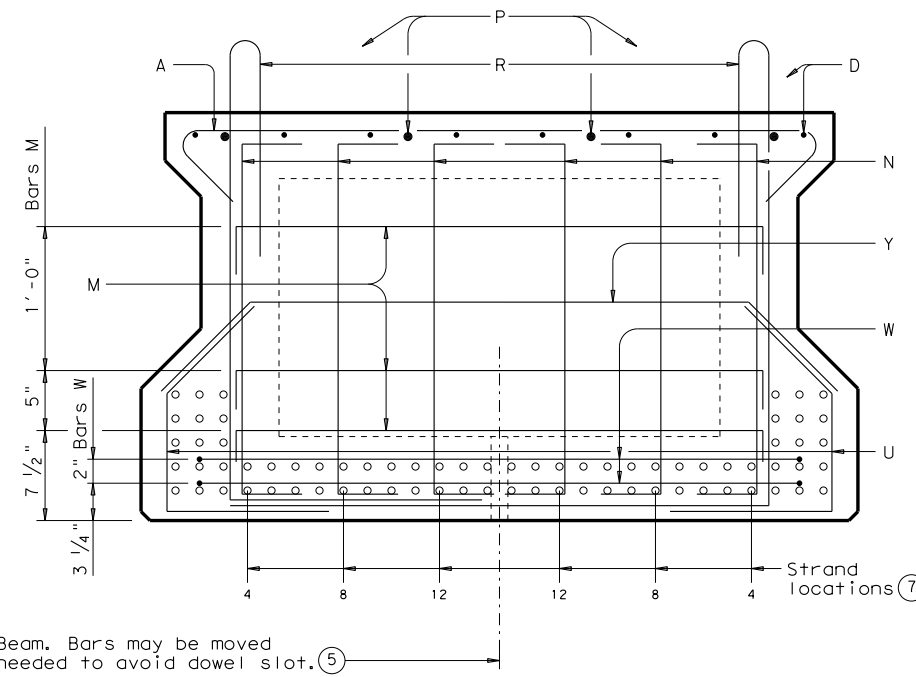
DATE: FILE:

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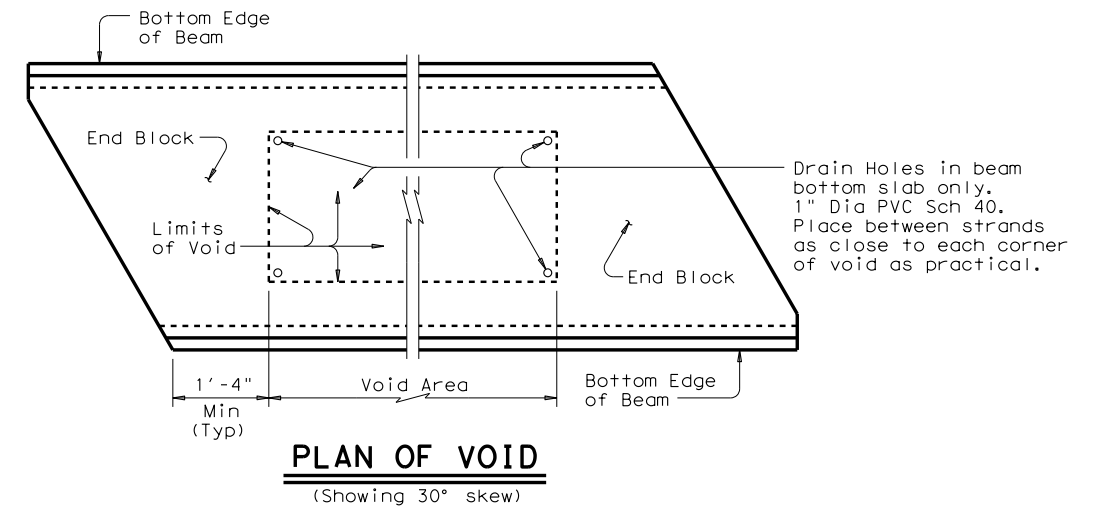
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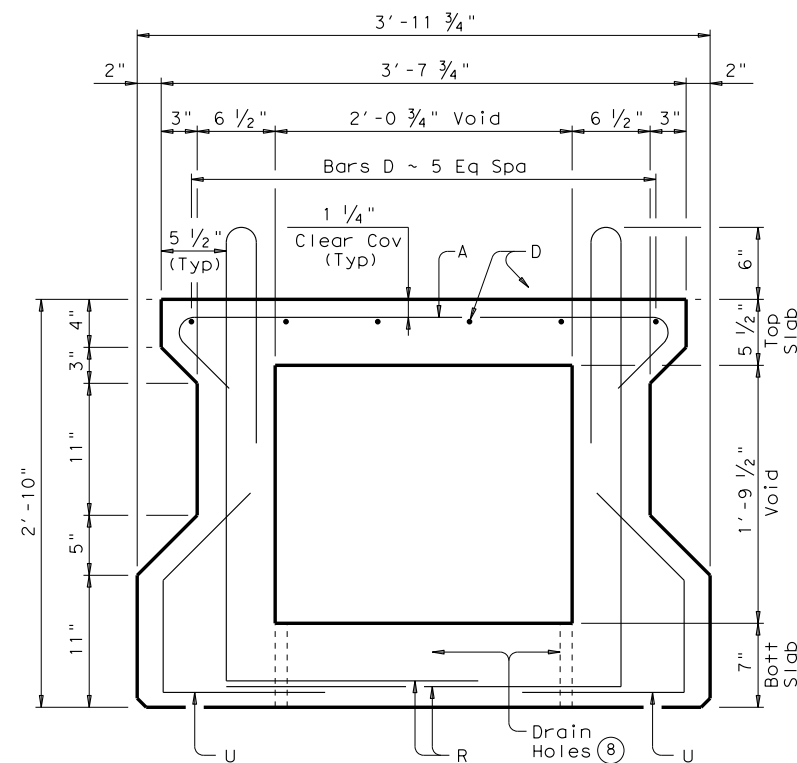
**END BLOCK SECTION ~ TYPE 4XB34**



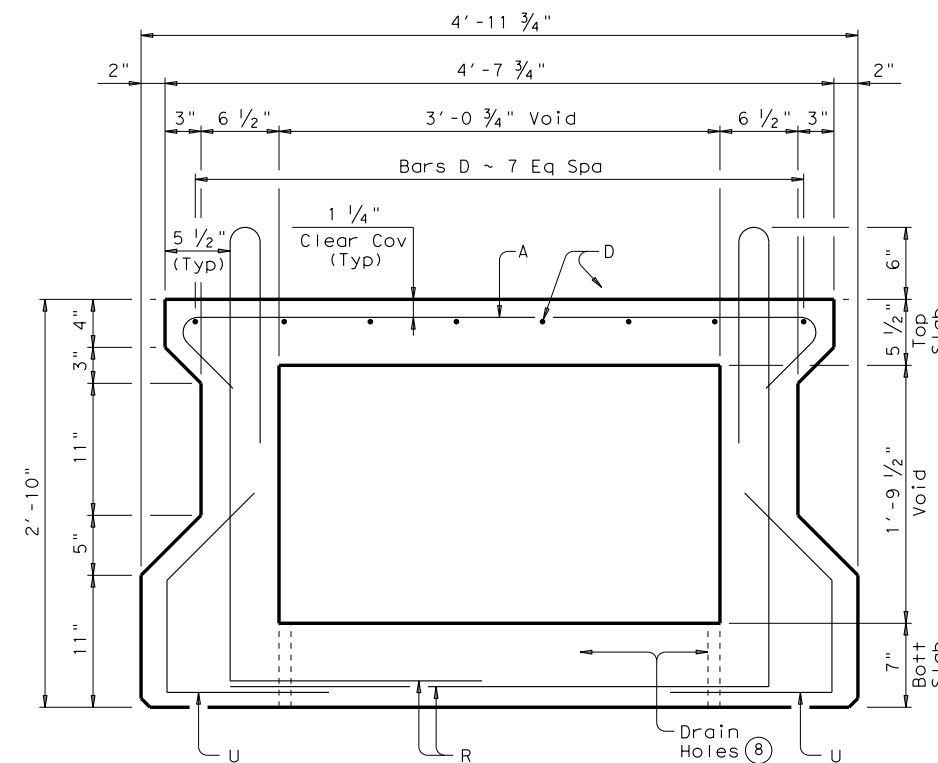
**END BLOCK SECTION ~ TYPE 5XB34**



- ⑤ 4" x 1 1/2" Vertical Slotted Hole at doweled beam end [labeled (D) on Bridge Layout]. Required for outside beam only or as shown on substructure details. Anchorage hole may be tapered (4 3/4" x 1 5/8") at base. If holes are formed with sheet metal, forms may be left in place.
- ⑦ See standard XBND or appropriate Prestressed Concrete X-Beam Standard Designs sheet for locations of pretensioning strands.
- ⑧ Drain Holes 1" Dia PVC Sch 40 Pipe as shown between strands in all beam void corners. See "Plan of Void".
- ⑨ Based on 150 pcf weight density of concrete. Weight of end blocks is not included.



**TYPICAL SECTION ~ TYPE 4XB34**



**TYPICAL SECTION ~ TYPE 5XB34**

BEAM PROPERTIES			
	Type 4XB34	Type 5XB34	
Area	in <sup>2</sup>	919	1,069
Y top	in	18.41	18.39
Y bott	in	15.59	15.61
I	in <sup>4</sup>	123,757	152,730
Weight ⑨	lb/ft	957	1,113

HL93 LOADING SHEET 2 OF 3



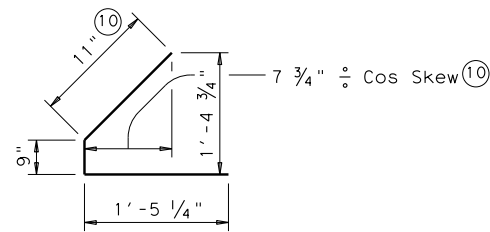
**PRESTRESSED CONCRETE X-BEAM DETAILS (TYPE XB34)**

**XB34**

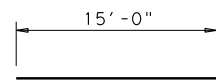
FILE: xbstds03.dgn	DN: JMH	CK: AM	DW: JTR	CK: JMH
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REVISIONS	DIST		COUNTY	SHEET NO.

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**BAR U (#4)** (11)

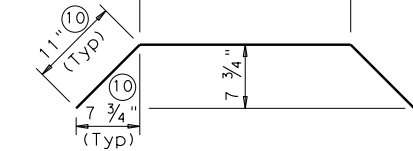


**BAR P (#6)**  
(Place at beam ends)

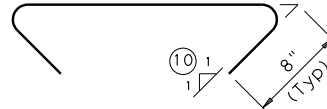
Type 4XB34	2'-4"	Normal
Type 5XB34	3'-4"	Normal
Type 4XB34	2'-4" $\div$ Cos Skew	At skewed beam ends
Type 5XB34	3'-4" $\div$ Cos Skew	At skewed beam ends

Type 4XB34	3'-4 3/4"	Normal
Type 5XB34	4'-4 3/4"	Normal
Type 4XB34	3'-4 3/4" $\div$ Cos Skew	At skewed beam ends
Type 5XB34	4'-4 3/4" $\div$ Cos Skew	At skewed beam ends

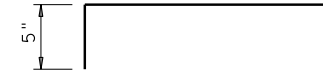
Type 4XB34	2'-8 3/4"	Normal
Type 5XB34	3'-8 3/4"	Normal
Type 4XB34	2'-8 3/4" $\div$ Cos Skew	At skewed beam ends
Type 5XB34	3'-8 3/4" $\div$ Cos Skew	At skewed beam ends



**BAR Y (#5)**

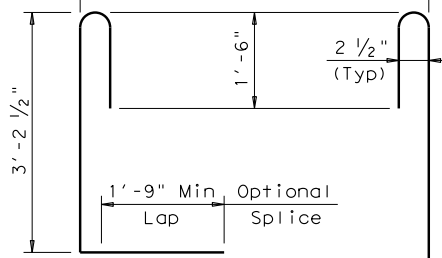


**BAR A (#4)** (11)

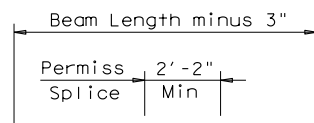


**BAR M (#5)**

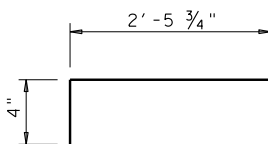
Type 4XB34	2'-8 3/4"	Normal
Type 5XB34	3'-8 3/4"	Normal
Type 4XB34	2'-8 3/4" $\div$ Cos Skew	At skewed beam ends
Type 5XB34	3'-8 3/4" $\div$ Cos Skew	At skewed beam ends



**BAR R (#4)** (11)



**BAR D (#5)** (11)  
(Place splices in middle third of span)



**BAR N (#4)**

Type 4XB34	3'-2"
Type 5XB34	4'-2"

**BAR W (#5)**  
(For square beam ends)

Type 4XB34	3'-2" $\div$ Cos Skew
Type 5XB34	4'-2" $\div$ Cos Skew

**BAR W (#5)**  
(For skewed beam ends)

(10) Dimension will vary slightly with skew. Adjust as necessary.

(11) At the Fabricator's option, alternate designs utilizing deformed welded wire reinforcement (WWR) conforming to ASTM A1064 of equivalent cross sectional area to replace all or some of Bars A, D, R and U will be permitted. Smooth Welded Wire Reinforcement is not permitted.

**GENERAL NOTES:**

Designed according to AASHTO LRFD Specifications. Use Class H concrete. Use Class H (HPC) if required elsewhere in plans. All reinforcing steel must be Grade 60.

Two-stage monolithic casting is required. The concrete in the first stage cast (bottom beam flange) must remain plastic until the second stage cast (webs and top beam flange) is placed. Vibrate as required to ensure consolidation between the two casts.

1 1/4" clear cover to reinforcement is required unless noted otherwise.

These details are applicable for skews up to 30 degrees only.

Chamfer bottom beam corners 3/4" or round to a 3/4" radius.

Punch through all drain holes, removing any blockage, before beams are shipped.

HL93 LOADING

SHEET 3 OF 3



**PRESTRESSED CONCRETE  
X-BEAM DETAILS  
(TYPE XB34)**

**XB34**

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